

Land use, land use change and forestry - Review of EU rules

Public consultation

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Key Messages

To strengthen the EU rules in the Land Use, Land Use Change, Forestry (LULUCF) sector, we recommend the European Commission to:

- Amend the 'no-debit' emissions accounting rule to a net carbon sink rule, which takes into account country specific carbon sequestration potentials, forest age structure and potential impacts on ecosystem functions.
- Remove or limit the flexibility mechanism to further motivate EU countries to contribute their fair share based on historical responsibility.
- Adopt consumption-based accounting complementing existing production-based accounts, to avoid the displacement of LULUCF emissions to other countries.
- Include incentives to mitigate trade-offs and foster synergies with non-carbon ecosystem services, like biodiversity conservation, prioritizing the conservation of the last-remaining natural landscapes in the EU.
- Prompt ecosystem restoration through deeper systemic reforms of the agricultural, food, and forestry sectors, by:
 - Limiting support for bioenergy to byproducts and waste fractions, and implement mechanisms to avoid competition with material uses.
 - Reducing the production, trade and consumption of meat and animal products in the EU.
- Reduce the flexibility allowance in the ESR, to encourage agricultural and other sectors to reduce their GHG emissions individually.

Introduction

Regulating emissions from the Land Use, Land Use Change and Forestry (LULUCF) sector is key to achieving the European Union's climate action objectives laid out in the Paris Agreement. The European LULUCF sector sequesters approximately 300 Mt CO₂e per year¹. However, this carbon sink has started to decline lately due to aging forests, deforestation, increased natural disturbances^{2,3}, and climate change⁴. We share the concern of the European Commission (*hereafter, the Commission*) in its efforts towards emissions reductions in the next 10 years (Regulation 2018/841). It is an ambitious and forward-looking document, and we welcome the EU's efforts to involve the public in this process. As PhD candidates in the field of land use and social ecology, we would like to offer our views on the Regulation and suggest some improvements. We believe this would further strengthen the EU's efforts in making transformative changes and being a world leader in climate action.

In the next sections, we offer our recommendations, informed by scientific evidence, to increase the effectiveness of the Regulation to meet its objectives in the land sector and contribute to global climate action.

First, we propose some revisions of current emissions accounting rules, forest reference levels (FRLs), flexibility mechanisms, and treatment of natural disturbances. Second, we recommend that the Commission complements carbon sink accounts with a carbon stock account, with corresponding rules and targets. Third, we recommend that the Commission includes concrete incentives to mitigate trade-offs and foster synergies between carbon sequestration, biodiversity and other ecosystem services. Fourth, we recommend that the Commission complements its production-based accounting with a consumption-based account, to avoid emissions displacement to countries outside the EU. Finally, we argue that the aim that there might be several limits to the land-based carbon sink. We hence urge the EU to acknowledge these limitations, and undertake deeper systemic reforms of the agricultural, food, and forestry sectors. We believe that the integration of alternative and comparative mitigation options into the EU's climate change mitigation strategies, alongside the development of strong incentives and community-driven bottom-up initiatives, are key to achieve a just, inclusive and sustainable transition to a low-carbon EU.

1. Amend emissions accounting rules to equitably share responsibilities

We recommend that **the Commission reforms the “no debit” rule to a net Carbon sink rule**, with a fair distribution of effort based on historical responsibility and potential carbon sequestration.

To achieve this **we recommend that the Commission links targets for gains in the forest sink to the total potential sink i.e. the difference between “actual” carbon stocks** (carbon stocks currently existing in landscapes) **and “potential” carbon stocks** (carbon stocks in the theoretical absence of land use but under similar environmental conditions), rather than relying on a past reference baseline. Evidence suggests that land cover change and land management as an outcome of human use has had significant impacts on carbon stocks in the EU; actual carbon stocks are less than half of potential carbon stocks⁵. However, the difference between actual and potential carbon stocks is not the same for all EU member states⁵. Increasing the carbon sink would first be easier in member states where the difference between the actual and potential carbon stock is large. Second, a target based on the potential carbon sink would account for historical land use changes^{7,8}, as contemporary forest sinks are often a consequence of previous deforestation and other land use change⁸⁻¹⁰.

Recent evidence suggests that forests in some EU member states have been regrowing over the last century. However, this growth has often been enabled by so-called “hidden emissions”, or the substitution of wood energy with an increased use of fossil fuels, abandonment of agricultural areas due to agricultural intensification (accompanied by enhanced fossil fuel, fertiliser and pesticide use) as well as outsourcing of forest harvest through wood trade¹¹. On the other hand, taking past FRLs to define carbon sink targets may hide changes in carbon stocks that may have occurred between the reference period and the accounted period. With the current reference period (2000 to 2009), deforestation or carbon stock changes that occurred between 2009 and 2021 will not be revealed in the sink account. It has been found that deforestation in Europe has witnessed an increase in the last decade³. In fact, this deforestation may improve the sink account, as the sink may now be higher than in the reference period, while the forest regrows to its original state, which would be misleading.

Other EU member states which have a high proportion of young forests should also have stringent targets not solely focussed on annual carbon sink gains. Here, the focus has to additionally be on the enhancement of forest carbon stocks. A sole focus on annual carbon sink gains in forests compared to a past reference baseline could lead to perverse incentives, spurring the conversion of the last remaining old-growth forests (with comparatively low take-up of CO₂) into young forests with fast turnover species. Such a forest age structure has few ecological merits¹². Rather it negatively impacts other ecosystem functions such as biodiversity⁸ and reduces the capacity of forests to store carbon in the long term, as slow growing trees usually live longer than fast growing pioneer-species (grow fast—die young effect)¹³. The services derived from keeping old-growth forests standing cannot be met with the quick turnover of fast-growing species and storing carbon in wood products. Moreover, recently deforested areas, and areas with young forest stands can benefit from faster (re)growing forests, enabling a more ambitious target.

In summary, a fair distribution of effort should consider the difference between actual and potential carbon stock, forest age structures, and potential impacts on ecosystems.

We therefore recommend that **the Commission reforms the “no debit” rule to the following net Carbon sink rule:**

$$\text{emissions} < x\% \text{ of removals, } x < 100$$

The value of ‘x’ would be specific to each member state. **‘x’ should be proportional to the difference between potential and actual carbon stocks, be inversely proportional to forest age, and consider potential adverse effects on biodiversity and the resilience of other ecosystems².** In turn, member states with a higher proportion of young forests and a lot of potential to sequester more carbon would have a more stringent target (low x) while member states with a higher proportion of mature old-growth/ secondary forests and little potential left to increase their carbon stock could keep the no debit rule (x close to 100). The ultimate goal would be for all member states to have reached a set percentage of their potential carbon stock by the end of the period. This percentage would be the same for all countries.

In addition, we recommend that **the Commission removes or limits the Flexibility Mechanism to motivate EU countries to contribute their fair share based on historical responsibility** as argued above. The Flexibility Mechanism risks countries going easy on their commitments or transferring their burden on to ‘better’ performing nations (much like the UNFCCC-led Clean Development Mechanism). While increasing the overall efficiency and cost-effectiveness of prescribed targets is a key goal, Member States undertaking efforts proportional to their circumstances and historical

responsibility is the bedrock of cooperation. The Flexibility Mechanism in its current form does not consider the historical emissions responsibility of countries and their natural potential of storing carbon. A high (or even existing) carbon sink may be the consequence of a recovery from previous deforestation and a subsequent exporting of deforestation through the trade and consumption of biomass products⁶. Therefore, a large carbon sink in the present time only compensates for historical emissions. Allocating these emissions to another country through a Flexibility Mechanism would hence neglect the country's historical responsibility, and may even lead to double counting. One option could be to allow a country with a LULUCF credit position to redistribute its credit only if that country has achieved a given share of its potential carbon stocks. Finally, the 262 MtCO₂ 'credit mechanism' of the Effort Sharing Regulation (ESR) also provides a buffer for inaction of Member States. We believe this would be counter-productive to the efforts and ambition of the Regulation.

We recommend that **the Commission fully considers the effects of land use intensity and management in the LULUCF accounting framework**. In the Impact Assessment accompanying the proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL (2016), the EU acknowledges the major importance of forest management on the capacity of forests to absorb carbon. Land management effects contribute to 42–47% of the difference between current and potential biomass stocks⁵. Better land management can as well reduce natural disturbances. For example, increasing tree species diversity increases forest biodiversity which enhances resilience against natural disturbances and consequently strengthens the carbon sink in forests. However, avoiding natural disturbances should not be achieved by replacing mature forests (which tend to be more affected by disturbances), by young forests, in order to preserve the higher carbon stocks and biodiversity of old forests. It is hence essential that the effect of management, including the avoidance, and land use intensity are thoroughly considered to complement existing area-based emissions accounting framework.

2. Consumption-based accounting to avoid displacement

The Inception Impact Assessment acknowledges that climate change is a trans-boundary problem, extending beyond national borders of EU countries. However, the current regulation omits the impact of European consumption on the global carbon sink (and stocks). With regards to the [EU Communication \(2019\) on Stepping up EU Action to Protect and Restore the World's Forests](#), and in coordination with the initiative on [reducing demand driven deforestation and forest degradation](#), the LULUCF regulation should include the impacts of the member states' biomass consumption on the carbon sink beyond their own borders, within and outside the EU⁷. A large part of the current carbon sink in EU forests is an outcome of imports from outside the EU i.e. the EU has 'outsourced' deforestation to other world regions. Changes in the origin of imports were also a driver of disturbance of the carbon cycle embodied in (western) European consumption over the last decades⁸. A sustainable, just and equitable climate action in the LULUCF sector needs to ensure no displacement⁹.

We hence urge the commission **to implement an accounting scheme of LULUCF emissions and a "no debit" (or any more ambitious) rule as well at the consumption level** to complement the currently implemented production-based accounting. This can have significant policy and emissions accounting benefits, by overcoming the drawbacks of production-based accounts^{10,11}.

3. Trade-offs and synergies between LULUCF emissions removals and other ecosystem functions

As stressed in paragraph (12) and Annex IV-A (f), it is crucial to reduce trade-offs and strengthen synergies between the reduction of LULUCF emissions on one hand, and biodiversity conservation, climate change adaptation, sustainable and resilient food systems, ecosystem restoration, and the circular economy on the other. However, incentives to ensure the coherence between these objectives are absent from the core of the regulation. This may lead to member states focussing solely on carbon-based land management schemes, neglecting possible trade-offs, for example, on biodiversity conservation. A carbon-based landscape restoration outlook can cause severe harm to European biodiversity by advocating the planting of fast-growing non-native tree species. Such monocultures cannot provide the ecosystem services that old-growth forests or naturally-regenerated forests can provide. Such an outlook may as well threaten the last remaining primary forests in Europe, which harbour exceptional biodiversity in addition to various other regulating and provisioning services. The Regulation does not present adequate safeguards in itself to protect these natural lands.

We recommend that the Commission includes incentives and regulations to avoid drawbacks of afforestation and reforestation projects on biodiversity and other ecosystem services. An ambitious approach would be the exclusion from the LULUCF accounting of all carbon removals resulting from afforestation projects that do not achieve stringent biodiversity (and other environmental) standards, are solely carbon-centred, or rely heavily on monocultures of fast-growing trees. These removals should still be reported, but would not be credited as contributions to reach a target. A more conservative approach could be the exclusion of “non-sustainable” afforestation projects from all flexibility mechanisms, especially in crediting countries.

Such measures would not only have positive side effects on productivity, biodiversity and other ecosystem functions, but could as well increase the resilience of forests against natural disturbances¹²⁻¹⁴.

4. Systemic change in production and consumption patterns

Finally, there is some evidence that existing European forests are reaching a carbon sink saturation, due to their age structure². Some evidence also suggests that rising temperatures may have already passed the thermodynamic threshold for photosynthesis, making it unclear if the forest sink will persist with rising temperatures¹⁵. Hence, we argue that afforestation efforts should continue to a degree, where possible without harming other important ecosystems, and while conserving carbon stocks of old-growth forests. This challenge will not be possible without a systemic change in the European agricultural, food, and forestry sectors, in order to prompt afforestation through land sparing or to increase the carbon sequestration capacities of agricultural soils brought about by more sustainable modes of food production. We raise two points here.

First, in recent years there has been a shift away from fossil fuels and towards bioenergy, derived from the burning of trees. This releases carbon which would have otherwise stayed locked up in forests. As more trees are harvested, a ‘carbon debt’ is created, which takes years to pay off by forest regrowth. Moreover, wood burning will increase warming for decades to centuries, even when the wood replaces coal, oil or natural gas. Clearly, the promotion of bio-energy is counter-productive to the urgent actions required to halt dangerous climate change. climate action.

We recommend that the Commission incentivizes member states to limit support for bioenergy to byproducts and waste fractions and implement mechanisms to avoid competition with material uses, as raised by an [open letter](#) from 2018 signed by 772 scientists, and an upcoming reiteration in 2021. The renewable energy directive and the bio-economy strategy have led to an important increase in harvested forest area since 2016, posing challenges for sustainable forest management³. The promotion of wood for renewable, “sustainable” energy and in the context of the bioeconomy, has been criticized for hampering efforts to increase the carbon sink and biodiversity in forests¹⁶. The benefits of using biomass for energy can only be observed if they actually replace fossil fuels, that too only up to a certain (often overestimated) limit¹⁷. Substituting fossil fuels should not be done by bio-energy, but by further investment into renewable technologies such as solar, wind, geothermal, and tidal energy.

Second, the impacts of the consumption of meat and animal products at levels common for an average European citizen on GHG emissions and water usage is now well-known. Despite the recent proliferation of meat alternatives in European markets and other interventions, European consumption still remains at unsustainable levels. This has direct implications on targets laid out under the Paris Agreement to avoid dangerous climate change.

We recommend that the Commission incentivizes the member states to change their consumption patterns, especially through healthier and low-meat diets. Reducing meat production and consumption would free up land for the restoration of forests and other ecosystems, which would be the most sustainable way to increase the carbon sink, and should be the main target of any climate change mitigation strategy in the LULUCF sector¹⁸. Additionally, it would lead to healthier lifestyles, as well as more ethical and just animal husbandry.

However, member states should avoid freeing up land for afforestation through unsustainable agricultural intensification, including the increased use of fossil fuels and mineral fertilizers causing high GHG emissions, or other agricultural practices generating soil erosion, biodiversity loss, discrimination of marginalized groups etc.¹⁹⁻²¹ Nevertheless, sustainable agricultural intensification practices should be welcomed.

We are, however, worried that the current flexibility allowance may provide counter-productive incentives. The current ESR of 262 million tonnes CO₂ covers almost 70% of the current GHG emissions from agriculture in the EU, and is primarily meant to compensate for the emissions of the agriculture sector. This leaves a lot of room to postpone deeper systemic reforms of the agricultural sector to reduce its GHG emissions²².

We hope our contributions are viewed favourably by the Commission. We appreciate the initiative of the Commission to take action towards emissions reductions in the LULUCF sector in the next decade, and hope that our contribution will help the commission strengthen its regulation of LULUCF emissions.

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**Fellow in [COUPLED, Operationalizing telecoupling to address sustainability challenges for land use](#): funded by the MSCA Horizon 2020 grant.*

*** Fellow in [HEFT \(Hidden Emissions of Forest Transitions\)](#): funded by an European Research Council (ERC) Starting Grant.*

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